

In the Claims

Claim 1 (Currently Amended): Rigid material based on PPO and a polystyrene polymer with improved impact strength ~~comprising~~ consisting essentially of:

- 99 to 20% of a resin (A) consisting of a mixture of PPO and of a polystyrene polymer, the polystyrene polymer being selected from the group consisting of polystyrene consisting of styrene units and high impact polystyrene polymers consisting of styrene units, and
- 1 to 80% of an impact modifier comprising at least one block copolymer S-B-M in which:
 - each block is linked to the other by a covalent bond or an intermediate molecule linked to one of the blocks by a covalent bond and to the other block by another covalent bond,
 - M consists of MMA monomers optionally copolymerized with other monomers and comprises at least 50% by weight of methyl methacrylate (MMA),
 - B is incompatible with the resin (A) and with the M block and its glass transition temperature T_g is less than 0°C,
 - S is incompatible with the B block and the M block and its T_g or its melting point m.p. is greater than the T_g of B,
 - S is compatible with the resin (A).

Claim 2 (Previously Amended): Material according to claim 1, wherein the M blocks comprise at least 60% by mass of syndiotactic PMMA.

Claim 3 (original): Material according to Claim 1, wherein the M blocks comprise reactive monomers, which include glycidyl methacrylate or ter-butyl methacrylate.

Claim 4 (Cancelled)

Claim 5 (Previously Amended): Material according to Claim 1, wherein the T_g of the B blocks is less than -40°C.

Claim 6 (Previously Amended): Material according to Claim 24, wherein the B blocks consist essentially of 1,4-polybutadiene.

Claim 7 (Previously Amended): Material according to Claim 24, wherein dienes of the B block are hydrogenated.

Claim 8 (Previously Amended): Material according to Claim 25, wherein the B block consists of poly (butyl acrylate).

Claim 9 (Original): Material according to Claim 1, wherein the Tg or m.p. of S is greater than 23°C.

Claim 10 (Original): Material according to Claim 9, wherein the Tg or the m.p. of S is greater than 50°C.

Claim 11 (Original): Material according to Claim 10, wherein S is polystyrene.

Claim 12 (Previously Amended): Material according to Claim 1, wherein the number-average molar mass of the block copolymer S-B-M is between 10,000 g/mol and 500,000 g/mol.

Claim 13 (Previously Amended): Material according to Claim 12, wherein the number-average molar mass of the block copolymer S-B-M is between 20,000 g/mol and 200,000 g/mol.

Claim 14 (Previously Amended): Material according to Claim 1, comprising from 1 to 35% of the impact of modifier and from 99 to 65% of resin (A).

Claim 15 (Previously Amended): Material according to Claim 14, comprising from 4 to 25% of the impact modifier and from 96 to 75% of resin (A).

Claim 16 (Previously Amended): Material according to Claim 1, wherein the impact modifier further comprises at least one polymer selected from the diblock copolymers S-B.

Claim 17 (Cancelled)

Claim 18 (Previously Amended): Material according to Claim 16, wherein the diblock S-B has a number-average molar mass which is between 10,000 g/mol and 500,000 g/mol.

Claim 19 (Previously Amended): Material according to Claim 1, wherein impact modifier also comprises at least one triblock S-B-S selected from linear triblocks S-B-S and star-shaped triblocks S-B-S.

Claim 20 (Previously Amended): Material according to Claim 1, wherein part of the triblock S-B-M is replaced with a pentablock copolymer M-B-S-B-M.

Claim 21 (Cancelled)

Claim 22 (Previously Amended): Material according to Claim 1, wherein the PPO to polystyrene polymer weigh ratio is between 1/9 and 9/1.

Claim 23 (Original): Material according to Claim 23, wherein the ratio is between 3/7 and 7/3.

Claim 24 (Previously Amended): Material according to Claim 1, wherein B block comprises dienes, polymerized dienes and/or random copolymers of diene.

Claim 25 (Previously Added): Material according to Claim 1, wherein the B block comprises an alkyl (meth) acrylate.

Claim 26 (Previously Amended): Rigid material based on PPO and an aromatic vinyl resin with improved impact strength comprising:

- 99 to 20% of a resin (A) consisting of a mixture of PPO and of an aromatic vinyl resin, the aromatic vinyl resin being selected from the group consisting of polystyrene homopolymers consisting of styrene unit, acrylonitrile butadiene styrene polymers, and high impact polystyrene polymers, and

- 1 to 80% of an impact modifier comprising:
 - (i) at least one block copolymer S-B-M in which:
 - each block is linked to the other by a covalent bond or an intermediate molecule linked to one of the blocks by a covalent bond and to the other block by another covalent bond,
 - M consists of MMA monomers optionally copolymerized with other monomers and comprises at least 50% by weight of methyl methacrylate (MMA),
 - B is incompatible with the resin (A) and with the M block and its glass transition temperature T_g is less than 0°C,
 - S is incompatible with the B block and the M block and its T_g or its melting point m.p. is greater than the T_g of B,
 - S is compatible with the resin (A); and
 - A pentablock copolymer M-B-S-B-M.